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UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF PUBLIC ROADS  
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCrory, Chief.

MONTHLY NEWS LETTER

June 20, 1929.

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Following are requisition numbers of quarterly requisitions for the first quarter of the fiscal year 1930: gas and oil, AE5; repair and upkeep of motor vehicles and tractors, including garage rent, AE6; repair to engineering instruments and equipment, and office equipment, AE7; purchase of miscellaneous engineering equipment supplies, exclusive of automobile repairs, tires, tubes, gas, and oil, AE8.

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When transfer of property is made in the field, a copy of the transfer slip must always be sent to this office so that the necessary changes in the property records can be made.

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Vouchers submitted in payment for garage rental must always be signed by the lessor in exactly the same way that the lease for the garage is signed; otherwise the voucher cannot be passed.

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Transportation requests on hand July 1 may be used during the fiscal year 1930. If these are stamped "1929", change to "1930".

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J. G. Sutton has contributed the following regarding the recent flood along the upper Mississippi River:

The highest stages since 1851 were reached near Quincy, Ill. The flood had two crests. The first occurred March 25 and the Quincy gage read 20.5 feet. The river fell to 16.1 feet by April 12 but heavy rains in Iowa on April 20 resulted in crests of 21.4 feet on April 23 and 27. It is believed that the rapid melting of the unusually heavy snow and ice was largely responsible for the first crest and kept the river at a high stage so that moderately heavy rains in April contributed to the second crest.



The Indian Grave levee broke March 21 and flooded the lower 7,000 acres. A diversion levee prevented this water from reaching the upper part of this district. However, the next day a second break occurred flooding the upper 12,000 acres of the district. On April 20 the diversion levee of the Marion County district broke at the same place that failed last November which was not unexpected as the crevasse had not been completely repaired. The levee of the South Quincy district failed on April 24, flooding approximately 6,000 acres. Railway service as well as travel on U. S. Route No. 61 was discontinued from April 22 to May 1.

The three most serious breaks occurred in districts that employed no experienced engineer to direct the work. Two of the three occurred at weak sections where no one was present at the time of the break. An attempt was made to prevent the other break with bags filled with soil. No barge had been provided to haul sand to dangerous spots and no lumber had been provided to use in the work. A drainage ditch along the inside toe of the levee is believed to be partially responsible for the break. The loss resulting from these three breaks may reach \$1,000,000 if no crop is grown this year.

About the same acreage was flooded in Illinois districts south of St. Louis as in the vicinity of Quincy. In the districts that were not flooded the pumping plants generally proved insufficient to control the water level and resulted in much flooding of low land. Damage was noted especially in the Henderson County, Fabius and LaGrange districts. In the Henderson County district the failure of the company to deliver sufficient voltage to run the pumps at high speed is believed partially responsible for the condition. In the Fabius district several shut-downs of the Diesel engines for repairs is believed in part responsible for the flooding of the low land.

D. L. Yarnell reports the following experimental work in progress at Iowa City:

A model of the Des Moines River at Ottumwa, Iowa has just been completed. Eight miles of the river and its valley 8,000 feet wide, was modeled in concrete on a scale of 1 to 800 horizontal, and 1 to 100 vertical. Construction of the model was begun April 21 and completed May 23. The steel river flume of the University hydraulic laboratory in which the model was built is 10 feet wide by 42 feet long.

There are two large bends in the river at the City of Ottumwa. The City of Ottumwa in the proposed enlargement of their power plant contemplate building cut-offs in these bends, thus reducing the flood stages in Ottumwa and at the same time increasing their power. The construction of the cut-offs will shorten the river about a mile and a half.

The tests which will be conducted shortly will include studies on cut-offs of 200, 400, and 600 feet width. The experiments should show the decreased flood stages which may be expected by building cut-offs. This model, the first of its kind ever to be constructed in the United States, should be of great value in flood relief studies.

Studies on run-off from small water shed areas are being conducted on the Ralston Creek watershed. This area, some 3 square miles, is covered by nine standard rain gages, one graphic recording rain gage and one water stage recorder for the stream. Continuous records are being kept on this project.

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THE UNIVERSITY OF CHICAGO

A report on The Flow of Water in Riveted Steel and Analogous Pipes, by Fred C. Scobey, Senior Irrigation Engineer, has been forwarded for publication as a technical bulletin.

As indicated in the title, this study was sufficiently comprehensive so that a definite general formula was determined for carrying capacity of all sheet and plate iron and steel pipe four inches or more in diameter.

In the past riveted pipe has been considered as in one category as regards carrying capacity. The investigation just finished disclosed that there are several distinct gradations, with a capacity for the type having the smoothest interior 30 per cent more than for the type having the most obstruction to flow due to interior rivet heads and plate projections.

Nearly 1200 observations, mostly on systems under actual operation conditions, were considered. These covered an age-range from new pipes to pipes nearly 50 years old. From these data a tentative law for the time-deterioration in capacity was deduced. It has long been appreciated that these pipes diminished in capacity due to the formation of tubercles on the inside surface, but the extent of this decrease has never been determined more closely than to assign, arbitrarily, decreasing coefficients of flow.

A. L. Fellows left Berkeley May 18 for Hot Springs, South Dakota, to supervise the construction of an earth fill dam on Cold Springs Creek in the Biological Survey reservation some miles north of that city. The plans and specifications for this structure were prepared by the Division upon invitation of the Biological Survey, Mr. Fellows being mainly responsible for them. Several bids were received by the Survey, all except one of which were within the limits of the Congressional appropriation for the work, the successful bidder obtaining the contract at a figure slightly lower than \$30,000. The dam is to be finished within 60 days from May 23, when the contractor arrived on the ground. Mr. Fellows arrived the following day, having stopped in Utah en route to inspect the Echo Canyon dam now under construction by the Bureau of Reclamation.

The Wind Cave dam will serve the dual purpose of adding a lake to a section of the West long famous for its natural beauty, and of conserving water for the herds of buffalo, deer, and other animals of the reserve, which constitute one of the finest and largest collections of the West.

L. T. Jessup left his official headquarters at Yakima, Wash. on May 22 for a trip through the Southwest and as far east as Arkansas, for the purpose of interviewing various authorities and inspecting installations of pumping plants. The data collected are to be incorporated in his report on Pumping for Irrigation and Drainage, which is soon to be published as a Government bulletin.

A. T. Mitchelson made a brief trip through Utah, Colorado, Nebraska, and Washington, interviewing operating engineers on irrigation projects as to methods of canal cleaning.

1. The first part of the report is a general introduction to the subject of the study.

2. The second part of the report is a detailed description of the methods used in the study.

3. The third part of the report is a discussion of the results of the study.

4. The fourth part of the report is a conclusion and a list of references.

5. The fifth part of the report is a list of appendices.

6. The sixth part of the report is a list of figures and tables.

7. The seventh part of the report is a list of footnotes.

8. The eighth part of the report is a list of acknowledgments.

9. The ninth part of the report is a list of abbreviations.

10. The tenth part of the report is a list of symbols.

11. The eleventh part of the report is a list of references.

Members of the staff of the Berkeley office will learn with regret of the death of Mrs. Dean W. Bloodgood, which occurred June 4, after an extended illness.

Miss Reid Venable, who for many years has carried on the office work connected with the California cooperative irrigation investigations, and recently has had charge of gathering news items for the Monthly News Letter, has resigned to accept a position with the Forestry Department of the University of California.

The Berkeley Office has received the following reports for publication as bulletins of the Department: The Discharge of Drains Serving Irrigated Lands by L. T. Jessup; Evaporation from Free Water Surfaces by Carl Rohwer; Commercial Irrigation Companies- Their Character, Usefulness, and Regulation by Public Authority by Wells A. Hutchins.

Mr. McCrory attended the meeting of the National Rural Electrification Project at Chicago June 19 and 20.

The following from this Division will present papers at the annual meeting of the American Society of Agricultural Engineers at Dallas, Texas, June 24-27: C. E. Ramser, "The Federal Soil Erosion Projects." F. C. Scobey, "The Flow of Water in Conduits." C. A. Bennett, "Results of Recent Cotton Drying Experiments." F. O. Bartel will send a paper to be read entitled "Soil Erosion and Water Conservation Facts from the North Carolina Experiment." B. S. Clayton will also contribute a paper entitled, "Rice Irrigation on the Grand Prairie of Arkansas."

T. A. H. Miller spent about two weeks in Toledo, Ohio, in June, supervising the erection of corn borer emergence cages for the Bureau of Entomology. There are two cages, each occupying about one acre.

A technical bulletin by A. H. Senner entitled "A study of the oil burner as applied to domestic heating" will shortly be available for distribution. The method of heat balance as devised by Mr. Senner and explained in this bulletin has been enlarged on by Prof. Theodorsen, formerly of Johns Hopkins University, who collaborated with this Division in some of the experimental work on which the bulletin is based.

The mechanical shop at Arlington Farm, Va., burned down recently and M. C. Betts is preparing plans for its reconstruction.

A six inch water main has been laid from Ft. Meyer to Arlington Farm substantially along the line staked out by engineers of this Division. G. M. Warren is preparing a book showing main and gate locations covering this extension.

